

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-9. Cancelled without prejudice.

10. (Currently Amended) A method of manufacturing a lamination-type piezoelectric element ~~according to claim 9,~~which includes a ceramic laminated body, in which ceramic layers and inner electrode layers are alternately laminated on each other, and also includes a pair of outer electrodes respectively joined to a pair of joining faces formed on an outer circumferential face of the ceramic laminated body, the method of manufacturing the lamination-type piezoelectric element comprising:

a laminated body forming step of forming the ceramic laminated body;

a groove forming step of forming a dent portion coming into contact with an outer circumferential end portion of at least some part of the inner electrode layers by irradiating a laser beam onto at least the joining faces on the outer circumferential face of the ceramic laminated body so as to form an outer circumferential groove portion, the shape of a recess portion of which is formed into a belt-shape, or the shapes of a plurality of recess portions connected with each other of which are formed into a belt-shape; and

an embedding step of forming at least one of an insulating portion made of insulating material and a conductive portion made of conductive material in the outer circumferential groove portion,

wherein the outer circumference groove portion having at least one protruding portion protruding from the periphery inside the dent portion or having at least one protruding portion protruding from the dent portion, arranged between the dent portions adjacent to each other is formed by adjusting an irradiating condition of the laser beam in the groove forming step, and

the dent portion is embedded so as to cover the protruding portion by forming at least one of an insulating portion made of insulating material and a conductive portion made of conductive material into the outer circumferential groove portion in the embedding step.

11. (Original) A method of manufacturing a lamination-type piezoelectric element according to claim 10, wherein a laser beam is irradiated so that an intensity of irradiating energy, which irradiates at a position where the protruding portion is to be formed, can be lower than an intensity of irradiating energy, which irradiates at a position adjacent to the position where the protruding portion, which protrudes in the direction of the normal line on the outer circumferential face of the ceramic laminated body, is to be formed, in the groove forming step.

12. (Original) A method of manufacturing a lamination-type piezoelectric element according to claim 10, wherein the belt-shaped dent portion extending zigzag is formed when the laser beam irradiating position is moved zigzag along the outer circumferential end portion of the inner electrode layer in the groove forming step, and the laser beam is irradiated so that the protruding portion protruding in the laminating direction of the ceramic laminated body can be formed in a bent portion of the dent portion.

13. (Original) A method of manufacturing a lamination-type piezoelectric element according to claim 10, wherein a method of manufacturing a lamination-type piezoelectric

element, in which a laser beam is irradiated so that an intensity of irradiating energy, which irradiates at a position where the protruding portion is to be formed, can be lower than an intensity of irradiating energy, which irradiates at a position adjacent to the position where the protruding portion, which protrudes in the direction of the normal line on the outer circumferential face of the ceramic laminated body, is to be formed in the groove forming step, and a method of manufacturing a lamination-type piezoelectric element according, in which the belt-shaped dent portion extending zigzag is formed when the laser beam irradiating position is moved zigzag along the outer circumferential end portion of the inner electrode layer in the groove forming step and the laser beam is irradiated so that the protruding portion protruding in the laminating direction of the ceramic laminated body can be formed in a bent portion of the dent portion, are combined with each other and the laser beam is irradiated so as to form the protruding portion.

14. (Original) A method of manufacturing a lamination-type piezoelectric element according to claim 10, wherein the laser beam is irradiated at discrete positions distributed along the inner electrode layer by ON-OFF control in which irradiation and non-irradiation of the laser beam are repeated while a position at which the laser beam is to be irradiated is being continuously moved along the inner electrode layer of the ceramic laminated body.

15. (Original) A method of manufacturing a lamination-type piezoelectric element according to claim 11, wherein the laser beam is a beam generated by a CO₂ laser.

16. (Original) A method of manufacturing a lamination-type piezoelectric element according to claim 11, wherein the wave-length of the laser beam is not less than 157 nm and not more than 10600 nm.

17. (Original) A method of manufacturing a lamination-type piezoelectric element according to claim 11, wherein the diameter of an irradiation spot of the laser beam is not more than 120 μm .

18. (Original) A method of manufacturing a lamination-type piezoelectric element according to claim 11, wherein stabilization baking of the ceramic laminated body is executed after the laser beam is irradiated and the dent portion is formed.